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work is of peculiar difficulty, requiring constant attention on the part of the observer, and it is not only necessary to have special laboratories properly furnished for it, but skillful and experienced observers must be engaged, who can give their entire attention to the work." The necessity for Government aid is urged.

THE EDITORS of "Drugs and Medicines of N. A.," J. U. and C. G. Lloyd, find it necessary to begin the issue of a four-page supplement to that publication, in which they can make known any new facts, *addenda et corrigenda*, answer questions, collate and present notes, etc. In the first number they ask botanists for information regarding the geographical distribution, local names, abundance, situations, etc., of the following plants: *Hydrastis Canadensis*, *Coptis trifolia*, *Aconitum uncinatum*, *A. reclinatum*, *Xanthorrhiza apifolia*, *Actæa spicata*, var. *rubra*, *A. alba*, *Cimicifuga racemosa*, *C. Americana*. Address 180 Elm street, Cincinnati, O.

A BUREAU of scientific information has been formed in Philadelphia, composed of officers and members of the Academy of Science, whose duty shall be the imparting, through correspondence, of precise and definite information upon the different departments of science. The organization is purely voluntary, and should not be imposed upon by trivial questions, or those containing no postage for returning the answer. We notice the following names in various branches of botany: Thomas Meehan, Exotic and Cultivated Plants; J. H. Redfield, Ferns and N. Am. Phænogams; J. T. Rothrock, Vegetable Physiology; F. L. Scribner, Grasses. The Secretary of the Bureau is Prof. Angelo Heilprin, who may be addressed at the Academy of Sciences.

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## CURRENT LITERATURE.

*Synoptical Flora of North America.* By Asa Gray, LL. D., etc. Vol. I.—Part II. Caprifoliaceæ-Compositæ. New York: Ivison, Blakeman, Taylor & Co.

Botanists will have a great sense of relief at the appearance of this very important and very difficult volume. The great order of Compositæ, to which it is chiefly devoted, has long needed a thorough revision by a master, and no one could possibly have had the whole subject so completely in hand as our author. This elaboration of some of our very complex genera of Compositæ is the result of time, and travel, and severe study, and is the matured, as well as probably the most valuable of the many contributions to North American Botany that have issued from Cambridge. To say that it will enhance a reputation already the greatest in American botany seems almost superfluous.

A general key to all the gamopetalous orders prefaces the volume, and in the whole matter of typography there is such an evidence of long experience that it leaves little to be desired. If an American botanist can have but one set of books on systematic botany in his library it should undoubtedly be this. An enumeration of a few of the more striking changes adopted or suggested must occupy the remainder of this notice.

Among the Caprifoliaceæ *Sambucus pubens*, Mx., becomes *S. racemosa*, L.; *Symphoricarpos* must end in "os," *S. montanus* of the west becoming *S. oreo-*

*philus*, Gr.; the western form of the southern *Loncera flava* is *L. Sullivantii*, Gr., which latter name will replace the former in our northern manuals; while *L. parviflora*, Lam., is now *L. glauca*, Hill.

The Rubiaceæ receive an accession in a monotypic African genus, *Pentodon*, to which *Oldenlandia Halei* of Chapm. Fl. has been referred; while *Borreria* disappears, its species appearing under *Spermacoce*; and the var. *montanum* of *Galium circeazans* is the *G. Kamtschaticum* of Steller.

Among the Valerians *Tournefort's* genus *Valerianella* appears, absorbing both *Fedia* and *Plectritis*; *F. Fagopyrum* becoming *V. chenopodifolia*, DC.; and *F. umbilicata* and *F. patellaria* varieties of *V. Woodsiana*, Walp.

Our North American Compositæ number 237 genera, containing 1,610 species, of which 1,551 are indigenous. By far the largest and most difficult genus is *Aster*, numbering 124 species, all natives, and as there is no real line of division between *Aster* and *Erigeron*, with its 70 indigenous species, this group of nearly 200 species represents the most successful North American group of the most successful phænogamous order. In fact the tribe *Asteroideæ* contains nearly one-third of our Compositæ, the three largest genera belonging to it, viz: *Aster* with 124 species, *Solidago* 78, and *Erigeron* 71. The fourth genus in point of size is *Senecio*, with 57 species, while those containing fewer than 50 species and more than 25 are *Aplopappus* 43, *Artemisia* 42, *Helianthus* 40, *Eupatorium* 39, *Cnicus* 37, *Bigelovia* 31, *Brickellia* 30, and *Coreopsis* and *Hieracium* each 28. The Californian genus *Hemizonia* has sprung into sudden prominence with 25 species.

The great South American genus *Vernonia* has but ten species with us, and western botanists will be glad to see additional room given for heretofore puzzling forms in a new variety under *V. Noveboracensis*, called *latifolia*, and a disentanglement from *V. fasciculata* of Nuttall's *V. altissima*, which is not only ranked as a species but given a new variety, *grandiflora*. In the genus *Eupatorium*, which includes *Conoclinium*, *E. parviflorum*, Ell., becomes *E. semiserotum*, DC.; *E. pubescens*, Muhl., is Torrey's var. *ovatum* of *E. rotundifolium*; and *E. purpureum* and *E. perfoliatum* each have varieties to dispose of some of their most decided forms. *Liatis pilosa*, Willd., is *L. graminifolia*, var. *dubia*, Gr.; and the genus loses several species belonging to sections raised to generic rank. For instance, *L. odoratissima* and *L. paniculata*, both of Willd., appear as species under the genus *Trilisia* of Cassini, and *L. fruticosa* is made to commemorate its re-discoverer, Dr. Garber, under the generic name *Garberia*. The multitudinous western forms of *Chrysopsis villosa* have begun to take shape under nine varieties, which only represent the more marked forms. The rapidly enlarging western genus *Aplopappus* appears with four new species and eight new varieties, thirty-five of its forty-three species bearing the name of the author. *A. inuloides* has been merged with *A. uniflorus*. In the second genus of the order, *Solidago*, there was great confusion, and among many changes are the following: *S. virgata*, Mx., is included under *S. stricta*, Ait.; *S. Virgaurea*, var. *humilis* is *S. humilis*, Pursh; *S. thyrsoides*, E. Meyer, is *S. macrophylla*, Pursh; *S. arguta*, var. *juncea* is *S. juncea*, Ait., with its variety *scabrella*; *S. Muhlenbergii* is included under *S. arguta*; *S. linoides* of the Manual is made a var. of *S. neglecta*; *S. altissimu* is *S. rugosa*, Mill.; and *S. gigantea* becomes a var. of *S. serotina*. *Brachycheata cordata* is found in great abundance in S. Indiana, but the old range of E. Kentucky and southward is retained. *Boltonia glastifolia* is merged into *B. asteroides*, L'Her. In the great genus *Aster* (including *Machaeranthera* and *Diplopappus*) several Linnaean species subside, among which are *A. linifolius* and *A. miser*, and the old section in which the latter stood has been completely overhauled, so much so that the incautious will become lost in the vexed synonymy, *A. vimineus*, Ell., *A. diffusus*, Ait., each with varieties, *A. Tradescanti*, L., and *A. paniculatus*, Lam., approximately covering the forms heretofore included under *A. Tradescanti* and *A. miser*; *A. paniculatus* also includes *A. simplex*, *A. tenuifo-*

lius of the Manual, and forms of *A. carneus*; *A. salicifolius*, Ait., also appears, including among others forms of *A. carneus*; *A. cæstivus* becomes *A. junceus*, Ait.; *A. graminifolius*, Pursh, is *Erigeron hyssopifolius*, Mx.; *A. flexuosus*, Nutt, is *A. tenuifolius*, L.; *A. linifolius* of the Manual is *A. subulatus*, Mx.; *A. ericoides*, var. *strictus* of Fl. Colorado, is *A. Porteri*; the genus *Machæranthera* brings into *Aster* its old specific names and several new ones; and thirty-five to forty species of recent description show that the west is not without its own forms. Very many other changes under *Aster* could be noted, but those given will serve to illustrate both the great need and thoroughness of the revision. The first thing noticeable under *Erigeron* is the change in all specific names from a neuter to a masculine termination; and the eastern botanists will be surprised at the number of western species, many of them of recent description. *Pluchea fetida* is included under *P. camphorata*. *Antennaria margaritacea* has become an *Anaphalis*. *Eclipta procumbens* is *E. alba*, Hasskarl. *Heliomeris* is merged into *Gymnolomia*, HBK. *Helianthus cinereus*, var. *Sulivontii* is considered a form of *H. doronicoides*, Lam.; *H. microcephalus* is *H. parviflorus*, Bernh. Part of *Actinomeris* has been included under *Verbesina*, *A. helianthoides*, Nutt., becoming *V. helianthoides*, Mx. Villanova appears under *Bahia*. It is already well known that *Maruta Cotula* is an *Anthemis*, and that *Leucanthemum* is *Chrysanthemum*. *Artemisia arctica* is *A. Norvegica*, Fries. *Arnica mollis* is *A. Chamissonis*, Less. *Senecio* is a famous western genus, and its many forms, especially mountain and alpine forms, are very interesting; *S. Elliottii* is included under *S. aureus*, var. *obovatus*; among the forms of *S. aureus*, var. *verneriofolius* becomes a species of the same name, and var. *alpinus* is *S. petreus*, Klatt; *S. longilobus* and *S. filifolius* are both included under *S. Douglasii*. *Nardosmia palmata* becomes *Petasites palmata*. Under *Cnicus* (*Cirsium*), *C. discolor* is made a variety of *C. altissimus*, and *C. Virginianus*, var. *filipendulus* is made a var. of the same species. *Cnicus benedictus* is *Centaurea benedicta*. *Krigia* includes *Cynthia*, and *C. Virginica* becomes *K. amplexicaulis*, Nutt. *Nabalus* is the only American subgenus of *Prenanthes*; *N. Fraseri* is *P. serpentaria*, Pursh., and *N. nanus* becomes one of its varieties; and a new species from Maine is named *P. Mainensis*. *Troximon* absorbs *Macrorhynchus*, and our old friend *Taraxacum Dens-leonis* is *T. officinale*, Weber, with the western *T. palustre* as its var. *lividum*, and a new high alpine form of the Colorado mountains named var. *scopulorum*.

Such are a few of the changes which would especially strike a user of the Manual, many of them already known from previous notices. It will be observed that the author, while accepting in general the decisions of Bentham & Hooker in the *Genera Plantarum*, has thought best to retain some of the original genera, as being a better expression of the facts so far as North America is concerned.

*Vacation Cruising in Chesapeake and Delaware Bays.* By J. T. Rothrock, M. D. J. B. Lippincott & Co., Philadelphia, 1884. 12mo., 262 pp. Illust.

The author is already well known to the readers of the GAZETTE by his excellent papers on methods of work in the German laboratories. The present volume is the record of a holiday trip taken primarily for recreation. The trained observer, however, can not be abroad without seeing objects of interest, and what is seen is to be commented upon. The comments appropriate to a pleasure trip are bound by no laws of sequence, and we are treated to delightful bits of philosophy, notes on yacht building, topography of the bays, character sketches, historical incidents, and glimpses of scenery; and withal, our author being a pronounced optimist, being becalmed just as a violent storm is approaching, or meeting an obstinate headwind that makes a day's hard labor in vain, does not for a moment lower his good spirits, but, instead, only gives some happy turn to the tenor of his thought. The book is adapted to the reader who wishes to fill up a spare hour, will prove acceptable to

thoughtful persons who desire instruction with their pleasure, and is of special value to all who contemplate assuming the management of a yacht, or cruising on the bays named.

The botanist will naturally expect to find items of professional interest, from an author so eminent in the science. But the book is a record of a season of recreation in a very complete sense of the word, and all odor of the shop was shaken off before starting. Nevertheless, there are a few excellent botanical notes and comments. The special value of the work to the botanist is to show how he may spend a vacation with the most profit. Indeed, but few readers will lay the book down without a longing to try yachting, or, if living inland, canoeing.

*The Essentials of Botany.* By Charles E. Bessey, M. Sc. Ph. D. Henry Holt & Co., New York, 1884. 12mo., 292 pp. Illust.

This is one of the Briefer Course text-books, and is essentially an abridgement of the author's larger *Botany*. The changes, however, are so many and so important that it has the interest of a new work.

A change that will go far toward making the work more popular with both teachers and pupils is the simplification of the language by using fewer technical terms, and substituting English equivalents whenever possible. Thus for parenchyma, collenchyma, sclerenchyma we have soft tissue, thick angled tissue, and stony tissue, and so with other terms. This is extended to the plant names also, as water net for Hydrodictyon, green felt for Vaucheria, white rust for Cystopus, pond scums for Zygnemaceæ, green slimes for Cyanophyceæ, water moulds for Saprolegniaceæ, sac-fungi for Ascomycetes, cup-fungi for Helvellaceæ, mossworts for Bryophyta, fernworts for Pteridophyta, etc. We have only mentioned the most prominent. Among the other innovations is the substitution of Zygomycota, Oomycota, Carpodophyta for Zygomyceteæ, Oomyceteæ and Carposporeæ, which makes the terms uniform with Protomycota, Bryophyta, etc., a change to be commended.

It is a pleasure to find that instead of trying to compress all the larger work into this, the author has given a readable statement of those important topics which lie at the basis of the science, in fact the "essentials of botany."

A valuable feature of the larger book was the directions for laboratory work. This has been much extended under the title of practical studies, and is now placed under every subject in the book, including the physiological part.

Among the minor changes are the employment of thicker leads, and sparing use of italics, which make more inviting pages to the eye. Quite a number of the cuts have not appeared in the larger work, and the failure to acknowledge the source of these must have been an oversight.

No text book ever gave better promise of meeting a long felt want than this. It will be welcomed wherever the aim is to learn from nature herself, and to make the book serve only as a *guide*.